

## GR-65H220BC: DFN 8x6 HS

### Description

GR-65H220BC is an integrated GaN FET which possesses not only E-mode GaN's benefits but also compatibility with commonly-seen e-mode GaN, Cascode GaN and Si MOSFET. GR-65H220BC provides high breakdown voltage, high current and high operating speed which is suitable for high power applications.

### Key Specifications

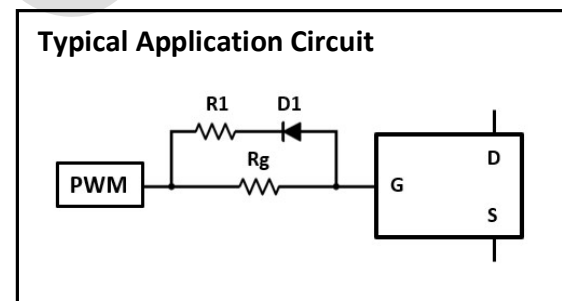
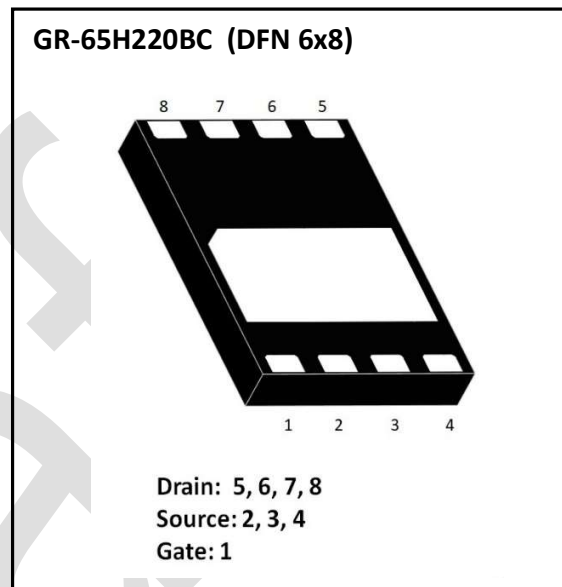
Part Number	GR-65H220BC
$V_{DSS, \min}$	650V
$V_{(TR)DSS, \min}$	800V
$R_{DS(ON), \text{typ}}$	220m $\Omega$
$Q_G, \text{typ}$	2.6nC
Package	DFN 6x8mm

### Features

- Gate drive voltage compatibility (-10V to 15V)
- High operating frequency
- Zero reverse recovery loss

### Applications

- Switch Mode Power Supplies (SMPS)
- AC-DC/ DC-DC Converters
- Motor Drives



## Table of contents

	Description .....	1
	Key Specifications .....	1
	Features .....	1
	Applications .....	1
	Table of contents .....	2
1	Electrical Characteristics and Parameters .....	3

## 1- Electrical Characteristics

➤ **Table 1 Absolute maximum ratings**

Symbol	Parameter	Value	Unit
$V_{DSS}$	Drain-source voltage	650	V
$V_{(TR)DSS}$	Transient drain to source voltage <sup>a</sup>	800	V
$V_{GSS}$	Gate- source voltage	-10V ~ +15V	V
$P_{tot}$	Total power dissipation @ $T_C = 25^\circ\text{C}$	70	W
$I_D$	Drain current (continuous) at $T_C = 25^\circ\text{C}$ operation	10	A
	Drain current (continuous) at $T_C = 100^\circ\text{C}$ operation	6	A
$I_{DM}$	Pulsed drain current (pulse width: 100us)	14	A
$T_C$	Operating temperature	Case	-55 to +150
$T_J$		Junction	-55 to +150
$T_S$	Storage temperature	-55 to +150	$^\circ\text{C}$
$T_{SOLD}$	Soldering peak temperature <sup>e</sup>	260	$^\circ\text{C}$

a. In off-state, spike duty cycle  $D < 0.01$ , spike duration  $< 1\mu\text{s}$

b. For increased stability at high current operation, see Circuit Implementation on page 3

c. Continuous switching operation

d.  $\leq 300$  pulses per second for a total duration  $\leq 20$  minutes

e. For 10 sec., 1.6mm from the case

➤ **Table 2 Thermal characteristics**

Symbol	Parameter	Value	Unit
$R_{\theta JA}$	Thermal resistance junction-ambient	50	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal resistance junction-case	2.5	$^\circ\text{C}/\text{W}$

➤ **Table 3 Electrical Characteristics** ( $T_{CASE} = 25\text{ °C}$  unless otherwise stated)

Symbol	Parameter	Conditions	Values			Unit
			min.	typ.	max.	
<b>Forward Device Characteristics</b>						
$V_{(BL)DSS}$	Drain-source voltage	$V_{GS}=0V$	650	-	-	V
$V_{GS(th)}$	Gate threshold voltage	$V_{DS}=10V, I_D=0.7mA$	1.6	1.8	2.0	V
$R_{DS(on)}$	Static Drain-source on-resistance	$V_{GS}=10V, I_D=5A, T_J=25\text{ °C}$	-	220	300	mΩ
		$V_{GS}=10V, I_D=5A, T_J=150\text{ °C}$	-	508	-	
$I_{DSS}$	Drain-source leakage current	$V_{GS}=0V, V_{DS}=650V, T_J=25\text{ °C}$	-	0.5	12	uA
		$V_{GS}=0V, V_{DS}=650V, T_J=150\text{ °C}$	-	100	-	
$C_{ISS}$	Input capacitance	$V_{GS}=0V, V_{DS}=400V, f=1MHz$	-	800	-	pF
$C_{OSS}$	Output capacitance		-	76	-	
$Q_G$	Gate charge	$V_{GS}=0\sim 10V, V_{DS}=400V, I_{DS}=10A$	-	2.6	-	nC
$Q_{GS}$	Gate-source charge		-	1	-	
$Q_{OSS}$	Output charge	$V_{GS}=0V, V_{DS}=0\sim 400V$	-	20	-	nC
$t_{D(on)}$	Turn-on delay time	$V_{DS}=400V, V_{GS}=0\text{ to }12V, I_{DS}=7A, R_G=25\Omega$	-	3	-	nS
$t_{D(off)}$	Turn-off delay time		-	7	-	
$Q_{RR}$	Reverse recovery charge	$V_{GS}=-10V, V_{DS}=0V$	-	0	-	nC